BRIDGE DECK PRESERVATION MATRIX

CONDITION STATE				REPAIR OPTIONS (c)	POTENTIAL RESULT TO NBI		NEXT ANTICIPATED EVALUATION
Deck Surface NBI #58a	Deck Surface Deficiencies % (a)	Deck NBI #58	Deck Underside Deficiencies % (b)		Item # 58a Deck Surface Rating	Item # 58 Deck Rating	
N/A	N/A	N/A	N/A	CSM Activities	No Change (d)	No Change (d)	1 to 8 years
NBI = 5, 6, 7	2% to 5%	NBI > 5	N/A	Deck Patch / Seal Cracks	Up by 1 pt.	No Change (d)	3 to 10 years
				Epoxy Overlay	NBI now 8, 9	No Change	10 to 15 years
		NBI ≤ 5	N/A	Deck Patch	Up by 1 pt.	No Change	3 to 10 years
				Hold	No Change	No Change	1 to 8 years
NBI = 5	5% to 15%	N/A		Hold	No Change	No Change	1 to 8 years
				Deck Patch	Up by 1 pt.	No Change	3 to 10 years
NBI = 4 or 5	15% to 30%	NBI = 5,6	<10%	Deep Concrete Overlay	NBI now 8, 9	Up by 1 or 2 pts.	25 to 30 years
		NBI = 3 or 4	10% to 30%	Shallow Concrete Overlay	NBI now 8, 9	Up by 1 pt	10 to 15 years
		NBI = 2 or 3	>30%	HMA Overlay with waterproofing membrane(e)	NBI now 8, 9	No Change	8 to 10 years
NBI= ≤ 4	>30%	NBI = > 5	<5 %	Deep Concrete Overlay	NBI now 8, 9	Up by 1 or 2 pts.	20 to 25 years
		NBI = 3, 4, or 5	5% to 30%	Shallow Concrete Overlay	NBI now 8, 9	Up by 1 pt	10 years
				HMA Overlay with waterproofing membrane(e)	NBI now 8, 9	No Change	5 to 7 years
		NBI = 2 or 3	>30%	Replace Deck	NBI now 9	NBI now 9	40+ years
				HMA Cap (f)	NBI now 8, 9	No Change	1 to 3 years

a.) Percent of deck surface area that is spalled, delaminated, or patched with temporary patch material.
b.) Percent of deck underside area that is spalled, delaminated or map cracked.
c.) The AHold@ option implies that there is on going maintenance of filling potholes with cold patch and scaling of incipient spalls.
d.) Sustains the current condition longer.
e.) Hot Mix Asphalt overlay with waterproofing membrane. Deck patching required prior to placement of waterproofing membrane.
f.) Hot Mix Asphalt cap without waterproofing membrane for ride quality improvement. Deck must be replaced in 1 to 3 years and be in the 5 year plan.

BRIDGE DECK PRESERVATION MATRIX
USER GUIDELINES

This matrix is a tool for Bridge Engineers to use in the selection of deck repair options. The condition of the deck is usually the driving force, or the key indicator, leading to a structure being considered for rehabilitation or replacement. However, there are times when other issues affecting the bridge may elicit the need for a rehabilitation project and this matrix does not address those situations. Some of these situations are super-structure deterioration, sub-structure deterioration, and functional issues such as under-clearance and/or bridge width. Sometimes it is desirable for an entire corridor to be brought up to a specific condition level as part of an overall strategy. So the user is cautioned to interpret the information from the matrix in the context of each specific case and use engineering judgement.

The matrix can be used from left to right or from right to left. If you have scoping inspection data with a deck delamination survey, select the row in the left column that matches the percent of surface defects. Then select the row in the second column that matches the percent of underside defects. To the right of this you will find a repair option and the associated changes to the NBI and the expected service life of that repair.

If you are looking for a fix that will last for a given period of time, select a row from the right column that matches the length of service desired and scan to the left to find the repair option. Be advised that the condition of the bridge at the time of the rehabilitation affects the expected service life of the selected repair option. So if the structure is in worse condition than shown on the left side of the matrix, the repair will not last as long. Conversely, if the deck is in better condition than shown on the left, a longer service life could be expected.

This matrix has been constructed based on the best knowledge of individuals from Construction & Technology, Maintenance, and Design Support Areas, and FHWA with many years of experience working with bridges. When used in conjunction with the Bridge Inspection Report and Bridge Project Scoping Report, the matrix can be an accurate guide in the majority of situations and will lead to a repair option that is economical and consistent with the Departments goals.